A Clinical Lecture
ON
CHRONIC INTESTINAL STASIS.

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GENTLEMEN,—I will make no apology for considering the subject of chronic intestinal stasis again, for its importance has now been generally recognized and its bearing on disease is most far-reaching and of immense interest to us as surgeons. It is only the other day that most of the leading physicians in Great Britain scoffed at intestinal stasis and autointoxication and their results. Now, on the other hand, the progressive scientific observer has recognized autointoxication as an important—if not, perhaps, the most important—factor in the production of disease. Our object is to learn how best to obviate it in the several morbid conditions in which we believe it to exist.

Up to the present we have been dealing only with end-results, readily assuming that one result is the cause of another. This is such a common fallacy that I need not supply illustrations. Therefore chronic intestinal stasis, which I believe to be the prime factor in the production of very many diseased conditions, is of enormous importance, and we cannot spend too much time or thought in unravelling the many problems which it presents. By the examination of our patients at intervals of time after operation we are able to simplify and improve our methods of procedure, to reduce the patient's risk, and at the same time to secure a maximum of benefit from operative interference.

By chronic intestinal stasis I mean such an abnormal delay in the transmission of the intestinal contents through some portion or portions of the gastro-intestinal tract as results in the absorption into the system of a greater quantity of toxic material than the organism is able to deal with effectively by means of the organs whose business it is to eliminate it. The excess circulates through the system, and produces degenerative changes in all the tissues, and a series of symptoms results which are very definite and unmistakable to any one who has rendered himself familiar with the condition. After a time those organs whose function it is to convert, convey, and eliminate the several toxic products circulating in the blood themselves undergo degeneration under the influence of prolonged and progressive strain of work. Then the degenerative conditions produced in the tissues progress still more rapidly in proportion as the converting and eliminating organs fail to perform their work efficiently.

The chief difficulty one experiences is in determining the share played by autointoxication in the production of certain diseases, so as to gauge the benefit that will be derived by the patient if the condition of autointoxication is eliminated more or less completely by mechanical interference. Perhaps I can best illustrate what I mean to convey by specific examples.

Take, for instance, tubercle and rheumatoid arthritis. While we are perfectly familiar with the bacillus of tubercle, the organism which produces true rheumatoid arthritis has not been clearly recognized. Now in my experience a patient cannot develop either of these diseases (except in the case of tubercle by inoculation) unless the resisting power to the entry of organisms, or in other words the vitality of the tissues of the body, has been depreciated by the poisons which circulate through them in chronic intestinal stasis.

These patients show in a varying degree all the clinical symptoms which are characteristic of the presence of autointoxication. The actual existence of chronic intestinal stasis can be demonstrated beyond question and gauged accurately by giving the individual a sufficient quantity of bismuth carbonate and by watching its rate of progress through the several portions of the gastro-intestinal tract.

This has been done for me for a considerable period by Dr. Jordan.[1] His observations have been of the greatest service in confirming the views I have long held and in demonstrating the several conditions sufficiently clearly to be obvious to the meanest intellect. Dr. Jordan's success has been due in great part to his insisting on being present at every operation performed on the patients he has examined by the *x* rays. In this way he has been able to improve his methods for showing and detecting obstructions and to translate accurately the meanings of the conditions presented by his photographs. It is only in this manner that a radiographer can obtain a thorough knowledge of the working of our drainage scheme and of the mechanism of the faults that so frequently arise in it. I feel I cannot express too strongly my appreciation of Dr. Jordan's work and of the perseverance with which he has rendered his knowledge of the several details as perfect as possible. In the patient affected with tubercle or rheumatoid arthritis chronic intestinal stasis always exists, and it can be demonstrated clinically and by the use of bismuth and *x* rays. For instance, in a case which was admitted into the Hospital for Sick Children under my care as tuberculous disease of the knee-joint the clinical symptoms of chronic intestinal stasis were absent. The administration of bismuth and radiography proved that the contents of the intestinal tract were not delayed in their progress. A Wassermann reaction showed that the child was syphilitic, and the knee reacted at once to salvarsan.

In the rheumatoid and tuberculous subjects a very rapid improvement in the general condition of the patient results from the operation of short-circuiting. This consists in the division of the end of the ileum and its direct implantation into the pelvic colon.

In the case of rheumatoid arthritis, and in that of tubercle in which there is no superadded infection, the improvement in the local disease is manifested very quickly. If, however, the tuberculous condition has become complicated by the presence of organisms other than those of tubercle, the rate of improvement is less rapid, and, in a degree, proportionate to the severity of the added infection. We find some difficulty in drawing the line between the cases in which the stasis can be met efficiently by the use of paraffin and those in which an alteration in the drainage scheme is advisable. In all doubtful cases we give paraffin a thorough trial before adopting operative procedures. The administration of paraffin, or the exclusion of the colon, does not interfere with any benefit which can be obtained by the use of vaccines, whether by the method employed by Wright or by that devised by Bier, or by any other supplementary treatment.

My experience of the advantage derived from short-circuiting in these two specific diseases—tubercle and rheumatoid arthritis—is that the local and general improvement is remarkable, and varies in proportion to the duration of the disease, and with the presence of organisms other than those peculiar to each disease. These facts I have demonstrated clinically to a large number of my friends, and I understand from many of them who have adopted the same treatment that their results have been equally gratifying. I presume we will soon have a full record of the work of other surgeons along these lines.

I am always very pleased to place any of the cases on which I have operated in this manner at the disposal of those of my surgical friends who may wish to inquire into the results of this method of treatment, since the knowledge of the benefit afforded by operation can only be obtained with certainty by a personal examination and study of the patient. A paper by Mr. Harold Chapple on the results of this operation was published in the *Lancet*, April 29th, 1911, entitled, "A Consideration of some Cases of Advanced Tuberculous Joints treated by Ileo-colostomy." Mr. Barrington Ward, the Medical Superintendent of the Hospital for Sick Children, has also described several of the cases of tubercle and rheumatoid arthritis which were operated on in that hospital;[2] he has the weight charts and bismuth photographs of many of these cases both before and after operation. Nothing is more striking than the rapidity and uniformity with which these patients put on weight after operation, the steady fall previous to interference being followed by a rapid ascent. Similarly the delay in the drainage is replaced by a very efficient action of the intestinal tract. No local operation is performed on the tuberculous joint or disease beyond the

occasional aspiration of an accumulation or the cleaning up of a wound infected by organisms other than tuberculous.

The operation of short-circuiting to remove the chronic intestinal stasis in tubercle and rheumatoid arthritis may be performed with advantage at any age. My earliest tuberculous case was 2 years old at the time of the operation. In both these diseases the operation is effected with comparative facility and at practically no risk. This is especially the case in children, since in them the pelvic colon is very considerably elongated. It is, therefore, readily brought out of the abdomen and retained in apposition to the end of the ileum, so facilitating very materially the performance of the operation. There seems to be exceedingly little risk associated with the operation, and within a few days of it there is very manifest improvement in the mental condition, and an appearance of happiness replaces one of apathy or distress. The older subject always expresses himself as being delighted that the operation has been done, as life appears so much brighter than it did previously.

MECHANISM.

Now, gentlemen, I must refer to the mechanics of some of the changes that develop in the gastro-intestinal tract in the first instance through defective feeding, and, later, through the habitual assumption of the erect posture of the trunk during about sixteen or more hours of the day. I will do so as briefly as possible.

I believe that the earliest changes are probably those that arise in consequence of the tendency for the caecum to descend into the true pelvis, together with the transverse and iliac colon, and to interfere with the normal functioning of the pelvic colon, bladder, and uterus. This tendency of the caecum to fall downwards and inwards into the true pelvis may be regarded as the resultant of a parallelogram of forces. This is opposed by the development of resistances, in addition to the normal anatomical structures which retain the intestines in position. These resistances may be regarded as forming the two limbs of the parallelogram, which crystallize into definite structures. May I remind you of a law I formulated about the skeleton—namely, that it represents the crystallization of lines of force which when exerted in one direction are laid down in compact tissue, when exerted in varying directions as cancellous tissue? Any modification in the direction of the line of force results in an alteration of the form of the skeleton, which is more marked the younger the subject. The soft tissues of the body are subject to precisely the same mechanical forces and react in a very definite manner, just as does the bony skeleton. I refer to this here as many observers appear to be unable to understand the mode of formation of the several restraining bands as evolutionary structures, but regard them as being of necessity the result of some inflammatory process. A study of the changes that develop in the body of the labourer would enable these objectors to grasp the factors which determine the development of these bands.*

On the outer aspect of the caecum these resistances crystallize so as to form peritoneal bands or membranes which tend to retain and support the caecum, obviating its prolapse into the true pelvis. One of these bands may fix the appendix at some point in its length, and obviously with the object of employing it as a resistance to downward displacement of the caecum. The appendix, being thick and strong, ought to make a very efficient ligament, were it not hollow and lined by a secreting membrane, and if the attachment of a band to a portion of its length did not render it very liable to kink, especially when strain is exerted upon it by the loaded caecum. This kinking produces an acute or chronic distension of the distal portion of the appendix beyond the kink, and a fluid or solid collection of accumulated epithelial and organismal débris may form in it. This mass by its pressure may produce ulceration and even perforation of the wall of the appendix.

Now the inner limb of the parallelogram of forces may be represented in one of two ways or by a combination of both. The termination of the ileum may be employed as an additional resistance to displacement by the development first of bands in the under-surface of the mesentery of this part of the ileum and later by their separation from the mesentery as a definite new or acquired distinct peritoneal ligament which attaches itself progressively to an area of the ileum more and more distant from the attachment of the normal mesentery. In this manner the section of the ileum is kinked by the band, which is shorter than its normal mesentery, and the bowel is twisted on its axis, because of the attachment of this short band to the ileum at a considerable distance from the mesentery. The tension exerted on or by these strains or resistances is increased by the erect posture. I have illustrated this ligament diagrammatically in the *Lancet*, April 30th, 1910, "The Kink of the Ileum in Chronic Intestinal Stasis," and Dr. C. H. Mayo has published a beautiful drawing of it in *Surgery, Gynaecology, and Obstetrics*, March, 1911, "Intestinal Obstruction due to Kinks and Adhesions of the Terminal Ileum." Dr. Franklyn Martin has written two able papers on the subject: "The Significance of the Lane Kink of the Ileum" (*Surgery, Gynaecology, and Obstetrics*, January, 1911), and "The Treatment of Certain Obstructive Bends of the Intestines due to Abnormal Mesenteric Attachments and Inadequate Parietal Support" (June, 1911). Or some point in the length of the appendix may become attached by acquired bands to the peritoneum, forming the posterior layer of the mesentery of the termination of the ileum. In such a case, if the grip of the appendix is sufficiently firm and secure, it takes the place of the acquired ligament in the mesentery, which consequently does not develop at all, or if it does it develops in proportion to the imperfect function of the appendix as a ligament. The end of the ileum is hitched up by the part of the appendix which runs upwards behind it, and its effluent is controlled and a state of obstruction results similar to that brought about by the acquired peritoneal band on the under-surface of the mesentery.

Now the distal portion of such an anchored appendix is often subject to distension changes. Consequently, the condition of partial obstruction of the ileum, which results from the pressure exerted upon it by the tense appendix which passes behind it and which is secured to its own mesentery, is liable to be complicated by inflammation of the appendix beyond the point of fixation.

It is in this form of obstruction of the ileum, produced by the fixation of the appendix in such a manner as to control the effluent, that relief to duodenal and gastric distension results from appendicectomy. This had led surgeons to suppose that gastric and duodenal troubles often result directly from inflammation of the appendix, and the mistake is a natural one, since the removal of the appendix in these circumstances is followed by cure of the gastric and duodenal symptoms. The simple and obvious explanation is that the removal of the appendix frees the ileal effluent from the obstruction which produced the duodenal distension. The cause being removed the consequence ceases to exist.

There is a third variety of obstruction of the effluent of the ileum into the caecum, which occurs in the very feeble, and is of comparatively rare occurrence in a marked degree. I call it the simple static variety, as opposed to the varieties produced by the acquired band or by the appendix anchored to the posterior aspect of the mesentery of the end of the ileum, or by both together. In these cases the caecum has been secured early in life to the floor of the iliac fossa by acquired adhesions. To reach the caecum, the terminal loop of the ileum has to ascend from the pelvis over the comparatively sharp margin of the pelvic brim in order to enter the inner aspect of the more or less fixed caecum. When the muscle wall of the intestine, as that of the body generally, is very feeble, the pressure exerted by the margin of the brim is liable to result in accumulation of material in the terminal loop, and the greater the accumulation the more marked is the pressure sustained by the small intestine, and the more complete does the obstruction at the brim become.

Let us consider the conditions which result from interference with the effluent from the ileum into the caecum. It means that material is delayed considerably in the small intestine, and that an excessive absorption of toxic material results in consequence, flooding the tissues of the

*I would refer to the following papers for further information on the subject: A Remarkable Example of the Manner in which Pressure Changes may Reveal the Labour History of the Individual, *Journ. of Anat. and Physiol.*, April, 1887; The Anatomy and Physiology of the Shoemaker, *Journ. of Anat. and Physiol.*, July, 1888; and The Result Produced on the Muscles, Bones, and Ligaments by the Habitual Exercise of Strain, BRITISH MEDICAL JOURNAL, December 1st, 1888.

body with poisonous products. The amount of deleterious organisms in this segment of the drainage scheme is increased, and their level in the intestine is raised in a corresponding manner. The strain exerted by the overloaded small intestine blocks the duodenum at its termination,[3] obstructs the escape of its contents, dilates and distends this portion of the small gut, and especially the first portion, which yields much more readily to the tension since it lies free in its peritoneal covering, while the second and third parts escape because they are buried firmly behind the peritoneum. These tension changes, aided by chemical and bacteriological developments in the contents of the intestine and by depreciation of the vitality of the tissue by the toxic material present in excess in the circulation, result in engorgement of the mucous membrane of the first part of the duodenum, later in its abrasion, and finally in its ulceration and perforation.

The same causes produce infection of the contents of the biliary and pancreatic ducts, determining the formation of gall stones, producing inflammation of the lining membrane of the ducts and of the glandular tissues about them, causing pancreatic inflammation and later cancer of the pancreatic or biliary tracts. The supposition that gall stones produce pancreatitis is merely another evidence of the common error of assuming that one effect of chronic intestinal stasis is the cause of another.

The stagnation of material in the duodenum obstructs the flow from the stomach, and an accumulation takes place in that organ in which bacteriological and chemical changes arise. The strain exerted upon the lesser curvature by the accumulation of the gastric contents, increased materially by that transmitted through the great omentum from a loaded transverse colon, aided by the chemical changes in the static gastric contents and the condition of autointoxication, results in engorgement, abrasion, ulceration, or in cancerous or other infections of its mucous lining. The strain is greatest at the pyloric extremity of the curve, but is felt along its entire length in a degree varying with the mobility of the pylorus. Time will not permit me to deal at great length with the condition of chronic stasis of the contents of the large intestine. In some cases the delay may be general and fairly evenly distributed through the entire large bowel, while in others there is a definite obstruction at the upper limit of the caecum, at the hepatic flexure, in the transverse colon just below the gall bladder and duodenum, at the splenic flexure in some portion of the sigmoid flexure, due to excessive fixation and telescoping of its length or to an irregularity of its fixation by acquired bands forming loops of bowel which become obstructed chronically or acutely, and again by the lowest acquired band which produces a kink at its junction with the pelvic colon at the brim of the pelvis.[4]

I have already discussed the mechanics of the large bowel fully on many previous occasions, and they are most obvious and distinct. Some opponents of my views put forward as an argument against them that they do not see and are unable to find the changes I describe, or that they consider them of no importance. I feel pleased that their inability to observe these changes is considered by them as an important argument in favour of their views, since I am sure that the more complete examination of their cases will enable them to see and understand physical conditions that were at once recognized and described by many surgeons of world-wide reputation in the United States and elsewhere. As I foretold, the American surgeon has taken the lead in this matter, and is investigating it with the energy, perseverance, originality, and promptitude that are characteristic of him. He is dealing with the varying problems presented by chronic intestinal stasis, and is endeavouring to learn the best means of meeting the disability of each portion of the drainage scheme in the most effective manner possible. The time is not far distant when we shall arrive at some general agreement on this subject.

Symptoms.

Time will not allow me to more than enumerate the symptoms of chronic intestinal stasis.

They may be divided into two groups—first, the simply mechanical, which are those due to obstructive changes in the gastro-intestinal tract and the infective results of them; secondly, those produced by the presence in the circulation of a number of poisonous toxins.

The simple mechanical group includes symptoms such as result from the distension of the stomach, duodenum, small intestine consequent on an interference with the passage of material from the small intestine into the caecum. The pain and tenderness over the distended duodenum is usually mistaken for gall stones, and quite a number of the cases I have operated upon have passed through the hands of eminent surgeons with great experience in abdominal work, who having diagnosed gall stones, have explored the gall bladder, have occasionally drained it on the excuse that there was pancreatitis, and have usually removed the appendix. I need not say that the unfortunate patients received no benefit from operative interference. Roughly, the symptoms are regarded as being due to indigestion, and a course or courses of drugs and diets are inflicted on the patient. In a considerable proportion of cases the tenderness evinced on pressure over the fixed and kinked ileum leads the surgeon to remove a normal appendix, frequently through an aperture in the abdominal wall sufficiently small to enable him to form no opinion whatever of the condition of the viscera in the abdomen.

If the mucous membrane of the duodenum or stomach is ulcerated definite symptoms may result. If cancer of the stomach should develop later its symptoms are fairly characteristic after a time. As in the preceding conditions, the *x*-ray affords invaluable evidence for differential diagnosis.

The symptoms of gall stones, pancreatitis, later those of cancer of the liver, of its ducts and of the pancreas, require no special mention.

In many of the patients I have operated on in which there was no obstruction gastro-enterostomy had been performed, usually with only a temporary benefit, while in others the patient was distinctly the worse for the operation. As I pointed out in these cases, the only benefit that results from this operation is that when the stomach is not dilated, the securing of the jejunum—it matters not whether to the anterior or posterior surface of the stomach—reduces the tendency for the jejunum to kink the end of the duodenum. When the stomach is largely dilated it does not even serve this purpose.

Now that we are more familiar with intestinal stasis, as demonstrated by a competent radiographer, these errors of operative treatment will cease to arise, and we will infuse more common sense into the principles and methods we employ.

In these static cases appendical obstruction in varying degrees of severity manifests symptoms with which we are all quite familiar, and which call for no special comment here. I would merely suggest to those who regard appendicitis as a primary condition and independent of chronic intestinal stasis that they observe by means of bismuth and the *x* rays the rate of passage of the intestinal contents in a case of appendical inflammation quiescent between attacks. They will observe that this condition has associated with it the most marked intestinal stasis.

The symptoms of stasis in the large intestine vary with the abruptness of the obstruction. In some cases there is much pain, distension, tenderness, vomiting, etc., while in others there may be no complaint whatever. This does not make the stasis any the less deadly in its poison-producing effect. Later results of stasis are ulcerative and mucous colitis. Many of my cases have endured an appendicostomy, while others less fortunate have had a hole made into the caecum with disastrous results. Not only did the latter condition render the patient's life almost unendurable, but it added enormously to the risk of the short circuit with or without colectomy, which is the only reasonable course in the circumstances. The symptoms resulting from fixation and inflammation of the sigmoid, volvulus, and cancerous or other ulceration of the large bowel, are usually fairly characteristic.

The troubles that arise in the ovaries and tubes from being included in the last kink, or from infection from the appendix, are also very definite.

The symptoms which ensue from the presence of toxins in the circulation are the result of degenerative changes in the several tissues.

1. The skin becomes thin, inelastic, wrinkled, and sticky,

and stained. The staining is general, but is most marked in the several frictional areas, commencing in and about the eyelids. Its degree varies with the colour of the hair, being very marked in dark-haired subjects, and very slow to develop in those with reddish or towy-coloured hair. The colour of the hair influences in an extraordinary degree the resisting power of the tissues of the individual to the degenerative action of the toxins.

The secretion of the skin is abundant and offensive, especially in the axilla and groins. It may render the patient very objectionable in society. In certain places—as in the back of the upper arm—the skin is thick, gelatinous to the feel, and often covered with small papules. This condition, combined with a certain lividity of the skin, may render the use of a short sleeve impossible. A quantity of fine down or hairs forms on the cheek, posterior surface of the neck and back in the middle line, and over the forearms.

2. The circulation becomes much enfeebled and the blood pressure is lowered. Later, when definite degenerative changes have become developed in the heart, vessels, and kidneys, the blood pressure may become very high.

The rate of the pulse is very variable, being increased very greatly in frequency by any exercise or by an accumulation of gas in the intestines, a condition closely resembling asthma sometimes resulting.

The ears, arms, and legs are cold even in the hottest weather. Sometimes patients will say that their legs become quite dead up to the knees. The transition from the warm to the cold area is often very abrupt.

3. The temperature of the patient is habitually subnormal. If, however, there be any infective change in the mucous membrane of an obstructed intestine, the evening temperature is high and in a degree proportionate to the infection. The range between the subnormal morning and the abnormally high evening temperatures may be great, and this variable temperature may continue for a long time.

4. The patient loses fat. At first the loss of fat is slow, but after a time it becomes a very conspicuous feature and gives the patient an appearance of senility and decrepitude which is most distressing.

5. The muscular system degenerates very rapidly, and the muscles become soft and friable and are unable to perform their functions normally and efficiently. Later, this may become so marked that the patient is quite unable to stand.

In the early stages resting postures are habitually assumed, and the deformities called lateral curvature, round shoulders, knock-knee, and flat-foot develop.

6. Partly owing to the loss of fat and partly owing to the degeneration in the muscular system, the organs are no longer retained in their normal position, but drop downwards and alter in form. For instance, the uterus drops and bends in varying directions, and produces symptoms consequent on these changes in form and position. The same is true of the kidneys and of the other abdominal viscera.

7. The influence of the toxins on the cerebro-spinal system is very marked. The patient becomes stupid and apathetic, and loses control over the temper, is very depressed, so much so as to suggest imbecility or dementia. While these patients are often inert and drowsy during the daytime, their nights are also very much disturbed, and are occasionally made miserable by dreams. They awake in the morning with a headache, and feel they have derived no benefit from their sleep. Headache, often very severe, in one form or another, is a common and a very distressing feature in cases of auto-intoxication. Neuritis is a common complication. These symptoms are usually comprised under the elastic term of "neurasthenia."

One of the most marked features after the big bowel has been excluded or removed is the extraordinary improvement in the mental condition and in the activity of the patient. A girl who had been confined to her bed for a year because she was unable to stand, who did not speak, who took no interest in life, who appeared to us all to be imbecile, took an active share in the ward work a month after colectomy, and is now a very useful and intelligent member of society. The sense of sight, smell, and taste are often much affected, while degenerative changes in the cornea, lens, and muscles of ocular accommodation are often very obvious.

8. The joints of these toxic people are very liable to degenerate with abnormal rapidity, and to cause them much pain and discomfort. These patients complain of pain in the muscles of their legs and thighs, in their loins, and in their arms. How far these pains result from toxic influences upon the muscles, joints, or nerves it is difficult to say, but all these tissues suffer more or less.

9. I have already called your attention to the fact that the resisting power to the entry of organisms into the several tissues of the body is very materially influenced by the autointoxication, and I illustrated this by tuberculous and rheumatoidal conditions. It applies equally to many other diseases, both of an acute and chronic nature.

10. The changes in the breast which are always present in a varying degree when autointoxication has existed for any length of time are very characteristic. Indeed, they may be regarded as a measure of the amount of poisoning to which the tissues of the body have been exposed.

The change commences as an induration in the upper and outer zone of the left breast, and later in the same area on the right side. As time goes on this induration becomes a more marked feature and extends to the rest of the breast, the change in the upper and outer segment being still in excess of that in the rest of the breast.

Later cystic and inflammatory changes arise, followed after an interval of time by intracystic growths or by cancer. In almost every case of cancer of the breast a previous history of chronic intestinal stasis can be demonstrated. I need hardly lay stress on the great importance and interest of this sequence.

TREATMENT.

The nature of the treatment of any case of chronic intestinal stasis must vary with the severity and duration of the condition, with the age and sex of the individual, and with the presence or absence of complications which have resulted from it. Every endeavour should be made by palliative means to obviate resort to operative interference, but if the clinical symptoms and radiographic evidence show that non-operative procedures are unlikely to be of service the surgeon should not hesitate to perform any operation, however radical. It is well to remember that for all practical purposes the only risk of these operations is the formation of adhesions which may kink and obstruct the small bowel, and over this complication we have, so far as I know, no control whatever apart from extreme care in avoiding irritation at the operation. Many suggestions have been made to obviate their formation, and I have endeavoured to give most of them a thorough trial, with the result that I have come to the conclusion that they give little or no protection. I am under the impression that the direction to work in is through the circulation, and that the formation of adhesions depends on some blood condition. It has seemed to me that they form less readily if the blood be rendered more fluid by potassium citrate, but of this I am uncertain. Yet, as the development of adhesions is practically the only serious complication we have to meet, we must devote our energies to obviating their formation. Should we succeed in doing this, removal of the large bowel becomes a simple operative procedure quite free from risk. Before we determine on any line of treatment in any particular case of stasis we must go thoroughly into the clinical evidence and trace a bismuth meal through the entire gastro-intestinal tract. The fallacy of the latter evidence consists in the fact that the obstruction may be very variable, just as are the attacks of pain, distension and vomiting, and if the case be *x*-rayed while these symptoms are in abeyance the full importance of the condition may not be recognized by the radiographer. If this fact is borne in mind, this fallacy can be reduced to a minimum. The chest should also be radiographed, since valuable evidence as to the absence or presence of dilatation and atheromatous changes in the arch which are present as a late result of stasis can be obtained in this way. To arrive at an accurate diagnosis of the degree and nature of the obstruction or stasis calls for much care and observation, and, except in very typical cases, it is often impossible to arrive at a correct conclusion at once without *x*-ray and other evidence. There are, on the other

hand, certain cases, as those of obstruction of the end of the ileum and distension of the duodenum, which present unmistakable and characteristic symptoms. The ileum may be felt to be fixed and kinked and very tender, while the distension of the duodenum consequent on the ileal obstruction can be recognized by the hand, while pressure on it is very painful to the patient.

As to the treatment, it resolves itself into operative and non-operative. The non-operative treatment consists in facilitating the passage of material through the gastro-intestinal tract by sufficient doses of liquid paraffin and by the pressure exerted on the lower abdomen by a spring support. The spring pressure provided by the support not only tends to oppose the descent of the viscera, but exerts an intermittent pressure on the intestines, constantly stimulating them to perform their peristaltic functions more actively. It also performs another very important purpose which would perhaps not occur to one at once, in that it controls the splanchnic area, keeps an excess of blood out of the large veins of the mesentery, and raises the pressure in the blood vessels of the brain. The enhanced capacity for mental work and of physical endurance which results from the exercise of this elastic pressure is most marked.

Such treatment is of very great value in cases where the stasis is general through the drainage scheme, or when the passage through part or the whole of the large intestine is obstructed. On the other hand, it is of less service when there is serious obstruction at the end of the ileum, or when the lumen of the duodenum is reduced very considerably by cicatrization of an ulcer. Even in these circumstances it is often very helpful in facilitating the passage of the fluid contents through a small aperture.

The use of paraffin reduces the quantity of faecal matter passed very considerably, probably because it is hurried along the tract and has not added to it the large quantity of organisms which form so much of its bulk in normal conditions. The quantity of urine passed is also much reduced, apparently because the hustling of the faecal contents along the canal reduces greatly the quantity of toxins absorbed by the mesenteric vessels and the products into which they are converted in order to be excreted through the kidneys, etc.

As to the nature of the food it is probably inadvisable to introduce into a defective drainage system such material as is liable to rapid decomposition and to the formation of poisonous toxins. When this form of treatment is obviously inadequate to meet the obstruction in the intestine, as indicated by clinical symptoms and bismuth and radiographic evidence and the consequent stasis, operative means must be resorted to.

The method of the operative interference varies of necessity with the nature of the factors responsible for the stasis. If the symptoms be due chiefly to obstruction at the end of the ileum by a newly-acquired ligament kinking and twisting this portion of the bowel and reducing its lumen proportionately the ligament must be divided and means taken to avoid its re-formation.

If the effluent through the end of the ileum be controlled and reduced by the pressure exerted by the proximal portion of an appendix which passes vertically behind the ileum, and is anchored to the posterior surface of its mesentery, the obstruction will be relieved by the excision of the appendix.

If the passage of the contents through the end of the ileum results from extreme debility, and is of the nature of what I call simply static, the ileum must be divided and its proximal extremity introduced into the pelvic colon below the last kink.* Should that kink not be sufficiently well developed, the outer surface of the large intestine should be sewn down to the adjacent peritoneum, so as to produce an efficient kink or obstruction to the ascent of faecal contents.

In many circumstances, especially if the subject be a female, or if there is decided stasis in the large intestine, the patient who has an ileal obstruction produced by an acquired ligament will derive infinitely more benefit from exclusion of the large intestine by means of a short circuit than by the division of the new short mesentery.

Also, in every case of tubercle or rheumatoid arthritis, in which simple means have failed, the bowel should be short-circuited without hesitation. This operation produces a maximum of benefit at a minimum risk, and is readily borne without evidence of any shock by children as young as 2 years of age.

When there are evidences of mucous or ulcerative colitis, short-circuiting should be resorted to as the best means of meeting the difficulty. Even in the most acute cases it will tide over a difficulty, and will render the subsequent removal of the large bowel, should it be necessitated, much more easy and free of risk to the life of the individual.

If after the performance of short-circuiting for stasis the patient should suffer sufficiently from distension of the large bowel the colon can readily be removed.

If the symptoms of stasis in the large intestine be very manifest, and if that tube is much inflamed, it is occasionally advisable to remove it when the ileo-colostomy is performed. However, as time goes on, I incline, except in special circumstances, to the performance of ileo-colostomy, the colectomy, if necessary, being performed at a subsequent period, when the patient is no longer suffering from autointoxication.

Objection was made by those who were ignorant of the result of the operation of short-circuiting on the ground that the patient would suffer from constant diarrhoea. To those who operate freely on these cases this objection is known to be absolutely unfounded.

The risk of ileo-colostomy is reduced enormously by the use of an oesophageal tube introduced through the rectum into the small intestine and retained for six days. It facilitates the passage of faeces through the junction and allows the patient to be fed as soon as the anaesthetic disturbance has passed. This is very soon, since shock is reduced to a minimum by the introduction of large quantities of normal saline beneath the skin before the operation is commenced. This probably by raising the blood pressure also obviates any vomiting after the anaesthetic.

Suppuration in the wound resulting from the contact of the intestines or the fluid secretion in the peritoneal cavity is met by the use of large hot compresses over the entire abdomen. They also add to the comfort and general well-being of the patient.

In order to judge adequately of the benefit of these operations it is necessary to see a number of the patients after operation, and the progressive improvement which they present is one of the most striking results of surgery.

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* The First and Last Kink in Chronic Intestinal Stasis. A paper read before the Derby Medical Society on October 17th, 1911, and published in the *Lancet*.

THE usual monthly meeting of the Executive Committee of the Medical Sickness, Annuity, and Life Assurance Society was held at 429, Strand, London, W.C., on Friday, April 19th, Dr. de Havilland Hall in the chair. The records of the society for the early part of the year show, as usual, a larger number of sick claims than in the warmer months, but they have been for the most part of short duration, and have not caused much more than the usual amount of disbursement. A large proportion of these claims has been caused by bronchial ailments; a moderate number of claims have been caused by influenza, but nothing in the nature of an epidemic has so far been noted. The annual general meeting of the society will be held on May 9th, and the report to be then submitted to the members will show that in 1911 the society made satisfactory progress both in membership and in financial strength. The sickness claims were within the amount expected and provided for in the tables of contribution, and a considerable addition was made to the funds, which now amount to over a quarter of a million sterling. As the business has grown, the amount of reserves required to make the benefits secure has necessarily grown also, but in every year the funds have grown at a still greater rate, and a handsome surplus has been produced. Prospectuses and all further particulars on application to Mr. F. Addiscott, Secretary, Medical Sickness and Accident Society, 33, Chancery Lane, London, W.C.